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Autobiographical Memory Specificity, Intrusive Memory, and General Memory Skills in Dutch–Indonesian Survivors of the World War II Era

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A lack of specific autobiographical memory may result from exposure to psychological trauma, intrusive memories of adverse events, and/or a general memory deficit. This study explored the role of these variables in 25 patients with various psychiatric diagnoses and 15 healthy controls. All participants had been exposed to war atrocities during their childhood in Indonesia. Patients produced significantly less specific memories than did controls. In addition, rather than performance on general neuropsychological memory tests, the frequent occurrence of intrusive memories and the avoidance of reminders of trauma predicted less autobiographical memory specificity. These results replicate and extend earlier findings on intrusive and nonspecific autobiographical memory in depressed samples to a group of people who experienced war atrocities in childhood.

KEY WORDS: autobiographical memory specificity; overgeneral memories; intrusive memory; general memory skills; war survivors.

When asked to recall specific events from their personal history some people produce overgeneral autobiographical memories (Williams, 1996). That is, they refer to a class of situations (e.g., "going to soccer matches") rather than to a single event (e.g., "last night I saw the national Dutch soccer team play"). Many studies found overgeneral memory in patients with major depressive disorder or some depression-related illness (e.g., Brittlebank, Scott, Williams, & Ferrier, 1993; Goddard, Dritschel, & Burton, 1996; Watkins, Teasdale, & Williams, 2000; J. M. G. Williams & Broadbent, 1986). Interestingly, anxiety disorders are not associated with overgeneral recall (e.g., Wessel, Meeren, Peeters, Arntz, & Merckelbach, 2001; Wilhelm, McNally, Baer, & Florin, 1997), except for those anxiety disorders related to psychological trauma. That is, people suffering from posttraumatic stress disorder (PTSD; McNally, Litz, Prassas, Shin, & Weathers, 1994; McNally, Lasko, Macklin, & Pitman, 1995) or acute stress disorder (ASD; Harvey, Bryant, & Dang, 1998) exhibit more nonspecific memories than individuals with a history of trauma but no psychopathology. Furthermore, overgeneral memories appear to be associated with delusional disorder (Kaney, Bowen-Jones, & Bentall, 1999), borderline personality disorder (Jones et al., 1999) and traumatic brain injury (H. W. Williams, Williams, & Ghadiali, 1998).

The diversity of clinical groups displaying a lack of specific autobiographical memory raises the question what features may explain the phenomenon. One possible candidate is exposure to psychological trauma in childhood. J. M. G. Williams (1996) hypothesized that when young children are exposed to adverse experiences, normal autobiographical memory development is disturbed. Rather than acquiring a specific retrieval style, traumatized children would maintain the categoric retrieval mode that is typical for earlier developmental phases. The results of

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a study by Kuyken and Brewin (1995) nicely fit with this idea. They found in a sample of clinically depressed women that overgeneral memory was only present in those women who also reported a history of child (sexual) abuse. Yet, other studies (e.g., Wessel et al., 2001; Wilhelm et al., 1997) did not find a straightforward association between memory specificity and self-reported childhood trauma. Thus, it seems that in itself, exposure to trauma in childhood is not a sufficient explanation for overgeneral memory.

Interestingly, Kuyken and Brewin (1995) also found that overgeneral memory was linked to intrusive memory. Intrusive memory is a hallmark symptom of PTSD (American Psychiatric Association, 1994) and involves the unbidden occurrence of thoughts, memories, and images associated with a personally experienced traumatic event. However, intrusive memory is not exclusively tied to traumatic events. Reynolds and Brewin (1999) report that intrusive cognition in depression is rather similar to that in PTSD. Furthermore, the finding that intrusive negative autobiographical memories were quite common in a nonclinical sample (Brewin, Christodoulides, & Hutchinson, 1996) suggests that the phenomenon is not even limited to psychopathology. Nevertheless, the link between memory specificity and intrusive cognitions seems to hinge on the autobiographical nature of those intrusions. If a lack of memory specificity were to be associated with just any type of intrusion, it should be found in patients with obsessive–compulsive disorder, who are frequently plagued by intrusive thoughts that are not related to autobiographical memory. A study by Wilhelm et al. (1997) indicates that this is not the case. Further studies (Brewin, Reynolds, & Tata, 1999; Brewin, Watson, McCarthy, Hyman, & Dayson, 1998) confirmed the link between intrusive and nonspecific memory in depressed but not necessarily traumatized patients.

All in all, it seems that the intrusive nature of negative personal memories rather than the mere exposure to adverse events plays a role in the inability to produce specific autobiographical memories. However, yet another source of overgenerality should be noted. Many earlier studies relied on patients with either major depressive disorder or high levels of self-reported depressed mood (e.g., Harvey et al., 1998; Jones et al., 1999; McNally et al., 1994). Depressed patients may display an overall impairment in memory due to attention lapses, lack of motivation, and so forth (e.g., Burt, Zembar, & Niederehe, 1995). Thus, nonspecific autobiographical memory may reflect the more general cognitive deficits that are typical for depression. In addition, there is some evidence for a link between overgeneral autobiographical memory and poor performance on other memory tests (i.e., semantic fluency, J. M. G. Williams & Dritschel, 1992; immediate recall of verbal material, H. W. Williams et al., 1998). However, as far as we know, there are no studies that directly compare general memory ability and autobiographical memory in psychiatric patients. Thus, it remains unclear whether overgeneral memory in such patients merely reflects a broader memory deficit linked to psychopathology.

This study compared autobiographical memory specificity in a mixed group of psychiatric patients and a healthy control group. Note that childhood trauma may have been relatively mild in earlier studies failing to find a link with memory specificity (Wessel et al., 2001; Wilhelm et al., 1997). Therefore we selected participants that all had been exposed to serious war-related events as young children. The expectation was that in spite of their traumatic childhood, controls would produce more specific memories than would patients. In addition, we looked at the extent to which autobiographical memory specificity was predicted by variables other than patient status. More specifically, in light of earlier findings in depressed groups (Brewin et al., 1998, 1999; Kuyken & Brewin, 1995) we explored the unique contribution of intrusive memory to nonspecific autobiographical memory. In addition, we explored whether more general memory skills (i.e., recall of verbal material) and semantic strategic retrieval (i.e., fluency) predicted autobiographical memory specificity. Autobiographical memories in response to positive and negative cue-words were regarded separately. Although group differences in valence are often absent (e.g., Wessel et al., 2001), some studies found that overgeneral responses to positive, but not negative, cues predicted later symptoms (Brittlebank et al., 1993; Dalgleish, Spinks, Yiend, & Kuyken, 2001; but see Brewin et al., 1999). We further explored whether specific memories to positive and negative cues have different correlates.

Method

Participants

Patients

Twenty-five patients (15 women) who sought treatment at a private practice participated in the study. This private practice is specialized in the medical and psychiatric treatment of victims of the Second World War (WW-II). All participants had lived in Indonesia during the Japanese occupation in WW-II and the Indonesian independence war in the period between 1945 and 1948. Their background was either Caucasian (Dutch; 12 patients) or mixed Caucasian–Indonesian (i.e., Indo; 13 patients). Seventy-six percent (19 patients) of the sample had been

interned in Japanese concentration camps. There can be little doubt that these participants had been exposed to horrifying events (Bramsen, 1995). The remaining 6 patients had not been interned by the Japanese occupiers but had nevertheless experienced serious threat and maltreatment. After the capitulation of Japan, Indonesian nationalists immediately launched a campaign for independence involving acts of terror against Dutch and Indo civilians. Many were imprisoned in camps for a second time.

Mean age of the patients was 60.4 years (range 55–68 years). They were screened with the Structured Clinical Interview for *DSM-IV* (First, Spitzer, Gibbon, & Williams, 1997; Groenestijn, Akkerhuis, Kupka, Schneider, & Nolen, 1999). They were diagnosed as follows: PTSD (15 patients); major depressive disorder (MDD; 3 patients); dysthymia (3 patients), bipolar II disorder (1 patient), somatization disorder (1 patient), eating disorder (1 patient), and anxiety disorder (1 patient). Comorbid diagnoses were MDD (5 patients), anxiety disorder (4 patients), pain disorder (3 patients), dysthymia (2 patients), substance dependency (2 patients), somatization disorder (2 patients), eating disorder (1 patient), and cyclothymia (1 patient). All in all, of the patient group 40% had PTSD, 12% had MDD, and 20% suffered from both PTSD and MDD.

Control Participants

Fifteen healthy individuals (6 women) were included in a control group. They were recruited through a newspaper advertisement that invited people who had survived WW-II atrocities, but who did not have any current psychological complaints to participate. Control participants were screened with a telephone-administered short version of the SCID. Individuals with a history of MDD or PTSD were excluded. Mean age in the control group was 62.3 years (range 56–68 years). Seven control participants (46.7%) were Indo, whereas the remaining controls were Caucasian. The majority of the controls (86.7%) had resided in Japanese concentration camps during WW-II. Controls were paid for their participation.

Assessment

Questionnaires

The PTSD Symptom Scale – Self Report (PSS-SR; Foa, Riggs, Dancu, & Rothbaum, 1993) was used to assess PTSD symptom severity in the week prior to the study. The PSS-SR consists of 17 items that are scored on a 4-point scale ranging from 0 (*not at all*) to 3 (*5 or more times per week*). Accordingly, total scores range from 0 to 51.

The Impact of Event Scale (IES; Horowitz, Wilner, & Alvarez, 1979) evaluates levels of intrusion and avoidance of trauma memories during the preceding week. Items are scored on a 4-point scale (weighted 0, 1, 3, 5; anchored 0 = *not at all* and 5 = *often*). The Intrusion subscale consists of seven items (range 0–35) and the Avoidance subscale contains eight items (range 0–40).

The Depression subscale of the Dutch version of the Symptom Checklist (SCL-90; Arrindell & Ettema, 1986) assessed depressive symptoms in the past week. This subscale (SCL-Dep) contains 16 items that are rated on 5-point scales (range: 1 = *not at all* to 5 = *very much*).

Neurocognitive Tests

IQ was estimated with the short version of the Groningen Intelligence Test (GIT; Luteijn & Ploeg, 1983). The Short-GIT consists of Sums (*Cijferen*), Mental Rotation (*Legkaart*), and Analogies (*Woordmatrijzen*).

The Verbal Learning Test (VLT; Brand & Jolles, 1985) consists of 15 monosyllabic and concrete Dutch nouns presented auditorily at a rate of one per second. Immediately after presentation a free recall test is given (Immediate Recall; IR). This procedure is repeated five times. Twenty minutes after the fifth trial, a surprise free recall task is administered (Delayed Recall; DR). For IR and DR tests, the total numbers of correctly recalled words were calculated. In addition, the total number of correctly recalled words on the five trials was employed as a measure of total learning capacity (TLC).

The GIT Fluency subtest (Luteijn & Ploeg, 1983) can be regarded as a measure of strategic retrieval from semantic memory. Participants are to mention as many items of a given topic within 1 min. These topics were *animals* and *professions*.

Autobiographical Memory Test (AMT)

Ten positive and 10 negative words served as memory cues in an Autobiographical Memory Test (AMT). The words came from previous studies using the AMT (Brittlebank et al., 1993; J. M. G. Williams & Broadbent, 1986). Half of the sample had cue words in the following order: *sorry*, *happy*, *angry*, *safe*, *clumsy*, *interested*, *hurt*, *successful*, *lonely*, *surprised*, *grief*, *devoted*, *rejected*, *hopeful*, *helpless*, *pleased*, *blame*, *calm*, *awful*, *carefree*. The other half of the sample had the reverse order. Words were printed in lower case letters (maximum height of 12 mm) on separate 15 × 21 cm cards. Two raters who were blind to diagnostic status judged the specificity of the memories. Only first responses were scored. A response

was coded specific if it referred to an event that happened within 1 day (e.g., "My wedding day"). Raters reached agreement in 92% of the cases. Kappas for individual cue words ranged from .67 to 1.0 (mean $\kappa = .83$). Numbers of specific memories to positive and negative cues were averaged over raters. Proportions specific memories were calculated by dividing these averages by the number of cues.[4]

Procedure

Participants were invited to participate in a memory study, but they were unaware of the precise objective of the experiment. After giving consent, participants received the PSS-SR, IES, and SCL. They were asked to complete these questionnaires at home on the day before the test session.

Participants were tested individually. The research assistant was aware of the participants' diagnostic status, but knew nothing of the study's hypotheses. First, the immediate recall phase of the VLT was administered. Next, the nonverbal subtests of the GIT (Sums and Mental Rotation) were completed. The delayed recall test of the VLT was given before participants performed the Analogies subtest of the GIT to prevent interference effects of other verbal material in the delayed memory task. Next, participants did the fluency task. Subsequently, the tester gave standard instructions for the AMT. Participants were told that a specific memory refers to a personally experienced event that happened at a particular time (within 1 day) and place. First, neutral practice items (e.g., car, shop) were given. It was not until the experimenter was confident that the participant understood the instructions and had provided at least three specific memories to practice words that the actual AMT started. Participants were to respond within 60 s after each cue word. The experimenter wrote down participants' verbal responses. Whenever she doubted that a response was specific, she gave a prompt ("Can you be more specific—can you think of a particular time?") in order to remind participants of the goal of the task. After completing the AMT, participants were debriefed.

[4]Initially, responses were scored according to the scheme described by Goddard et al. (1996; see also J. M. G. Williams & Dritschel, 1992). That is, nonspecific responses were either coded as extended (e.g., "during the war") or categoric (e.g., "when my children come for a visit"). Responses that did not contain memories (e.g., "I don't know" or "I have never been happy") were considered nonresponses. Mean proportion nonresponses was .31 ($SD = 0.15$) for patients and .23 ($SD = 0.19$) for controls. This difference was not significant, $t(38) = -1.5$. Reliability analyses showed that overall, scoring of specific responses was the most reliable. Accordingly, we used this category as the dependent variable.

Table 1. Demographic and Psychometric Data in Patient and Control Groups

	Patients ($n = 25$)	Controls ($n = 15$)
Age	60.3 (3.8)	62.3 (4.3)
IQ	109.8 (15.9)	120.0 (9.6)
PSS	24.5 (10.9)	4.5 (4.9)
SCL-Dep	38.4 (14.6)	20.5 (5.3)
IES-Intrusion	21.2 (9.8)	3.5 (6.1)
IES-Avoidance	22.2 (10.8)	3.1 (5.2)

Note. IQ = Intelligence Quotient; PSS = PTSD Symptom Scale; SCL-Dep = Symptom Check List, Depression subscale; IES = Impact of Event Scale. Standard deviations are in parentheses.

Results

Demographic and Psychometric Data

Table 1 presents the demographic characteristics and scores on the self-report measures of patients and controls. A *t* test revealed no significant differences between the groups regarding age, $t(38) = -1.47$, $p = .15$. However, controls attained significantly higher IQ scores than did patients, $t(38) = -2.24$, $p < .05$. Patients scored higher than controls on the PSS-SR, SCL-Dep, and the IES subscales of intrusion and avoidance, all ts > 4.4, ps $< .001$.

Memory Measures

Table 2 shows the results of the various memory tests. On all memory variables, a series of analyses of covariance (ANCOVAs) was conducted to test differences between patients and controls. As for the covariates, ANCOVAs including PSS or SCL-Dep did not reveal significant effects of either symptom scale, all Fs < 1.3 and Fs < 1.7 for PSS and SCL-Dep respectively. However, ANCOVAs

Table 2. Mean Performance on Verbal Learning Test (VLT), Fluency Task, and Autobiographical Memory Test (AMT) in Patient and Control Groups

	Patients ($n = 25$)	Controls ($n = 15$)
VLT[a,b]		
Immediate	4.9 (1.8)	5.3 (1.7)
Total	40.6 (12.3)	41.5 (7.1)
Delayed	9.5 (2.6)	8.3 (2.8)
Fluency[b]	37.5 (8.3)	42.8 (8.0)
AMT[c]		
Positive cues	.29 (0.21)	.64 (0.25)
Negative cues	.33 (0.24)	.67 (0.22)

Note. Standard deviations are in parentheses.
[a] VLT data for 1 patient were missing.
[b]Mean number correct responses.
[c]Mean proportion specific memories.

with IQ as covariate showed intelligence to be significantly involved in IR, $F(1, 37) = 4.4$, $p < .05$, Fluency, $F(1, 37) = 5.2$, $p < .05$, and marginally significant in DR, $F(1, 37) = 3.8$, $p = .06$, and AMT performance, $F(1, 37) = 3.8$, $p = .06$. Hence, all further reports on group differences concern ANCOVAs with IQ as a covariate. Patients and controls did not differ regarding verbal memory measures of IR and TLC, Fs < 1.2. For DR, there was a marginally significant tendency for the patient group to recall more words than the control group. No group differences emerged regarding fluency test performance, $F(1, 37) = 1.7$.

Proportions specific autobiographical memories were subjected to a 2 (groups) $\times$ 2 (cue word valence) ANCOVA with repeated measures on the last factor and IQ entered as covariate. The group main effect was highly significant, $F(1, 36) = 7.7$, $p < .001$, indicating that overall, patients retrieved less specific autobiographic memories than did controls. The valence main effect and the Valence $\times$ Group interaction were not significant, both Fs $< .62$.

Predictors of Autobiographical Memory Performance

To explore whether measures of intrusive memory and general memory skills predicted autobiographical memory specificity beyond group differences, hierarchical multiple regression analyses were performed. Separate analyses were carried out for AMT-negative and AMT-positive as dependent variables. In all regression analyses described below, group membership (coded 0 = *control* and 1 = *patient*), and IQ were entered in the first step in order to account for variance due to participant characteristics. As the ANCOVAs described earlier showed no effects of PSS and SCL-Dep, these symptom variables were not included in the regression analyses. Not surprisingly, the set of participant characteristics accounted for a large part of the variance in autobiographical memory specificity, that is, AMT-positive: $R^2 = .41$, $F(2, 37) = 12.8$, $p < .001$ and AMT-negative: $R^2 = .41$, $F(2, 37) = 12.9$, $p < .001$.

The first series of hierarchical regression analyses entered IR, DR, TLC, and fluency in the second step. This set of general memory variables did not add significantly to explained variance of AMT-positive scores, $\Delta R^2 = .04$, $F(4, 32) = 0.6$, or AMT-negative scores, $\Delta R^2 = .04$, $F(4, 32) = 0.6$.

The second series of hierarchical regression analyses entered total IES scores in the step following the initial set of participant characteristics. Total IES scores did not add significantly to explained variance in AMT-positive scores, $\Delta R^2 = .01$, $F(1, 36) = 0.7$. However, total IES added a significant 8% to explained variance in AMT-negative scores, $\beta = -.42$, $t = -2.3$, $p < .05$. To examine the contribution of the IES-subscales, two separate analyses were conducted with AMT-negative as the dependent variable. IES-avoidance explained a significant 8% additional variance, $\beta = -.41$, $t = -2.3$, $p < .05$. IES-intrusion added a marginally significant 6% variance, $\beta = -.37$, $t = -2.0$, $p = .05$.

Discussion

This study examined autobiographical memory performance in people who had been exposed to war atrocities in childhood. No effect of cue word valence on memory specificity was found. Overall, participants with a psychiatric diagnosis displayed less specific memories than did control participants. This finding fits with earlier failures to find a relation between overgeneral memory and self-reported childhood trauma (Wessel et al., 2001; Wilhelm et al., 1997). That is, patients and controls had a similar background in that the majority of them had lived in concentration camps as a child. Thus, the finding that controls displayed a superior autobiographical memory supports the idea that in itself, exposure to traumatic events in childhood is not a sufficient explanation for overgeneral recall. Yet, there are several reasons for viewing such a conclusion as preliminary. The first reason is that we did not employ a nontraumatized control group. Although control participants' overall AMT performance ($M = 0.66$) was only slightly below that of a healthy control group ($M = 0.73$) in an earlier study (Wessel et al., 2001), participants with a less troubled childhood might have performed better than either traumatized group. Second, this study did not employ a measure of trauma severity. It might be possible that patients encountered more distressing events during their internment than did controls. Also, trauma history was not documented in a standardized way, leaving the possibility that patients encountered more traumatic events after the war than did controls. Thus, future studies should confirm the idea that trauma exposure is not a sufficient explanation for overgeneral memories.

Apart from trauma exposure, this study further explored two potential sources of nonspecific memory. As for the first source, the results are inconsistent with the notion that a lack of autobiographical memory specificity is a by-product of a more generalized memory deficit. Patients and controls did not differ on tests of immediate memory, total memory capacity, and semantic retrieval. Moreover, the only group difference approaching significance indicated that patients performed *better* on the delayed recall task than did controls. Finally, regression analyses showed

that general memory skills did not predict autobiographical memory performance beyond participant characteristics such as patient status or IQ. Interestingly, these results are at odds with the earlier finding (J. M. G. Williams & Dritschel, 1992) that categoric recall and semantic fluency are correlated. Perhaps this discrepancy reflects methodological differences between the studies. For example, J. M. G. Williams and Dritschel (1992) used a nonclinical sample. Furthermore, compared to categories similar to those used in the present study (e.g., animals), J. M. G. Williams and Dritschel (1992) reported stronger associations between categoric recall and fluency for U.K. prime ministers and U.S. presidents. Perhaps people rely more on autobiographical retrieval when they provide examples of public figures than when they generate items with less historical qualities.

The second possible source of nonspecific autobiographical memory that was explored was intrusive memory. Both IES-intrusion and avoidance predicted the tendency to produce less specific memories in response to negative, but not positive cue words. Overall, these results extend earlier findings in depressed samples (Brewin et al., 1998, 1999; Kuyken & Brewin, 1995) to a group of people who were exposed to traumatic experiences in childhood, but who did not necessarily suffer from depression. Two issues regarding the connection between IES scores and AMT-performance should be noted. First, a closer look at earlier findings reveals various interconnections between indices of intrusive memory and nonspecific memories. That is, sometimes IES-intrusion, but not avoidance, was associated with AMT-performance (Brewin et al., 1999), whereas others (Brewin et al., 1998; Kuyken & Brewin, 1995) found a link with IES-avoidance, but not intrusion. In contrast, in the present study both intrusion and avoidance were related to a lack of memory specificity, but only for responses to negative cues. These inconsistencies may reflect unreliability of the IES (Brewin et al., 1999) as well as the AMT. A second issue involves our use of the IES. Because participants rated intrusions in relation to trauma in general, it cannot be concluded that nonspecificity was exclusively linked to intrusive memory of war experiences. Methods that more closely look at the content of intrusions (e.g., Reynolds & Brewin, 1999) may shed more light on the precise connection between intrusive and overgeneral memory.

For now, the present results suggest that intrusive memory is in some way related to autobiographical memory specificity. This raises the question what mechanism underlies this link. One possibility is that intrusions invite extensive rumination about the past and interfere with the ability to distract oneself (Lara & Klein, 1999). Such a ruminative self-focus would decrease autobiographical memory specificity (Williams, 1996). It has been found that self-focused rumination introduces a negative autobiographical memory bias in dysphoric individuals (Lyubomirsky, Caldwell, & Nolen-Hoeksema, 1998). More importantly, a recent study (Watkins et al., 2000) noted that a distraction manipulation relative to a rumination manipulation reduced overgeneral autobiographical memory in a dysphoric community sample. The idea that rumination is the mechanism by which intrusion influences autobiographical memory might provide an interesting possibility that is open to empirical testing.

Another explanation for the link between intrusive and overgeneral memory hinges on the interpretation of intrusive memory as an emotional autobiographical memory phenomenon (e.g., Brewin et al., 1998, 1999). Perhaps it is the repetitive execution of the retrieval process for some (intrusive) memories that plays a critical role in hampering recall of other memory material. For example, Anderson and Spellman (1995) showed that when some word stimuli are frequently retrieved from memory, subsequent recall of related words is impaired. Of course, this account is highly speculative. However, it might provide an interesting avenue for future studies on the link between intrusive and overgeneral memories.

Apart from theoretical considerations, there are some methodological issues that deserve comment. To begin with, reminiscent of earlier reports on PTSD and IQ (Macklin et al., 1998; McNally & Shin, 1995), patients did less well on an intelligence test than did controls. Earlier studies also found connections between memory specificity and IQ (H. W. Williams et al., 1998) or educational level (Wessel et al., 2001). Accordingly, the present data show that IQ predicts overall autobiographical memory performance, albeit at a marginally significant level (i.e., $\beta = .26$, $t = 1.9$, $p = .06$). Taken together, this implies that autobiographical memory studies should control for IQ effects. Clearly, using a matched control design would provide the optimal strategy.

A similar argument can be made regarding the role of general memory ability in autobiographical memory specificity. Our sample included patients with general memory skills that were comparable to those of control participants. In addition, although patients showed markedly higher self-reported depressive and posttraumatic stress symptoms, according to SCL-depression norm scores (see Arrindell & Ettema, 1986) they were only moderately depressed. Thus, it remains possible that studies relying on more severely depressed people will observe an association between poor general memory ability and overgeneral autobiographical memory. Therefore, even though the present results suggest that a lack of memory specificity occurs independently of other memory deficits,

it seems prudent for studies relying on more severely depressed samples to treat such deficits as confounding variables.

In conclusion, we found that patients who were exposed to war-related events in childhood produced less specific autobiographical memories than did healthy controls with similar negative experiences. The results also indicate that intrusive memory rather than deficient general memory skills predicts less autobiographical memory specificity. Whether the link between intrusive and nonspecific memories originates from a ruminative self-focus or a detrimental effect of frequent memory retrieval is a question for future empirical investigations.

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References

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

Anderson, M. C., & Spellman, B. A. (1995). On the status of inhibitory mechanisms in cognition: Memory retrieval as a model case. *Psychological Review, 102,* 68–100.

Arrindell, W. A., & Ettema, J. H. M. (1986). *SCL-90: Handleiding bij een multidimensionele psychopathologie-indicator (SCL-90: Manual of a multidimensional psychopathology indicator).* Lisse: Swets & Zeitlinger B.V.

Bramsen, I. (1995). *The long-term psychological adjustment of World War II survivors in The Netherlands*. Delft: Eburon Press.

Brand, N., & Jolles, J. (1985). Learning and retrieval rate of words presented auditorily and visually. *Journal of General Psychology, 112,* 201–210.

Brewin, C. R., Christodoulides, J., & Hutchinson, G. (1996). Intrusive thoughts and intrusive memories in a nonclinical sample. *Cognition and Emotion, 10,* 107–112.

Brewin, C. R., Reynolds, M., & Tata, P. (1999). Autobiographical memory processes and the course of depression. *Journal of Abnormal Psychology, 108,* 511–517.

Brewin, C. R., Watson, M., McCarthy, S., Hyman, P., & Dayson, D. (1998). Intrusive memories and depression in cancer patients. *Behaviour Research and Therapy, 36,* 1131–1142.

Brittlebank, A. D., Scott, J., Williams, J. M. G., & Ferrier, I. N. (1993). Autobiographical memory in depression: State or trait marker? *British Journal of Psychiatry, 162,* 118–121.

Burt, D. B., Zembar, M. J., & Niederehe, G. (1995). Depression and memory impairment: A meta-analysis of the association, its pattern, and specificity. *Psychological Bulletin, 117,* 285–305.

Dalgleish, T., Spinks, H., Yiend, J., & Kuyken, W. (2001). Autobiographical memory style in Seasonal Affective Disorder and its relationship to future symptom remission. *Journal of Abnormal Psychology, 110,* 335–340.

First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. B. W. (1997). *Structured Clinical Interview for DSM-IV Axis I Disorders*. New York: Biometrics Research Department.

Foa, E. B., Riggs, D. S., Dancu, C. V., & Rothbaum, B. O. (1993). Reliability and validity of a brief instrument for assessing Post-Traumatic Stress Disorder. *Journal of Traumatic Stress, 6,* 459–473.

Groenestijn, M. A. C. V., Akkerhuis, G. W., Kupka, R. W., Schneider, N., & Nolen, W. A. (1999). *Gestructureerd Klinisch Interview voor de vaststelling van DSM-IV As I Stoornissen. (Dutch adaptation of the SCID for DSM-IV Axis I Disorders)*. Lisse: Swets & Zeitlinger B.V.

Goddard, L., Dritschel, B., & Burton, A. (1996). Role of autobiographical memory in social problem solving and depression. *Journal of Abnormal Psychology, 105,* 609–616.

Harvey, A. G., Bryant, R. A., & Dang, S. T. (1998). Autobiographical memory in Acute Stress Disorder. *Journal of Consulting and Clinical Psychology, 66,* 500–506.

Horowitz, M., Wilner, N., & Alvarez, W. (1979). Impact of event scale: A measure of subjective stress. *Psychosomatic Medicine, 41,* 209–218.

Jones, B., Heard, H., Startup, M., Swales, M., Williams, J. M. G., & Jones, R. S. P. (1999). Autobiographical memory and dissociation in borderline personality disorder. *Psychological Medicine, 29,* 1397–1404.

Kaney, S., Bowen-Jones, K., & Bentall, R. P. (1999). Persecutory delusions and autobiographical memory. *British Journal of Clinical Psychology, 38,* 97–102.

Kuyken, W., & Brewin, C. R. (1995). Autobiographical memory functioning in depression and reports of early abuse. *Journal of Abnormal Psychology, 104,* 585–591.

Lara, M. E., & Klein, D. N. (1999). Psychosocial processes underlying the maintenance and persistence of depression: Implications for understanding chronic depression. *Clinical Psychology Review, 19,* 553–570.

Luteijn, F., & Ploeg, F. A. E. van der (1983). *Handleiding Groninger Intelligentie Test (Manual Groningen Intelligence Test)*. Lisse: Swets & Zeitlinger B.V.

Lyubomirsky, S., Caldwell, N. D., & Nolen-Hoeksema, S. (1998). Effects of ruminative and distracting responses to depressed mood on retrieval of autobiographical memories. *Journal of Personality and Social Psychology, 75,* 166–177.

Macklin, M. L., Metzger, L. J., Litz, B. T., McNallly, R. J., Lasko, N. B., Orr, S. P., & Pitman, R. K. (1998). Lower precombat intelligence is a risk factor for posttraumatic stress disorder. *Journal of Consulting and Clinical Psychology, 66,* 323–326.

McNally, R. J., Lasko, N. B., Macklin, M. L., & Pitman, R. K. (1995). Autobiographical memory disturbance in combat-related Posttraumatic Stress Disorder. *Behaviour Research and Therapy, 33,* 629–630.

McNally, R. J., Litz, B. T., Prassas, A., Shin, L. M., & Weathers, F. W. (1994). Emotional priming of autobiographical memory in Post-traumatic Stress Disorder. *Cognition and Emotion, 8,* 351–367.

McNally, R. J., & Shin, L. M. (1995). Association of intelligence with severity of posttraumatic stress disorder symptoms in Vietnam combat veterans. *American Journal of Psychiatry, 152,* 936–938.

Reynolds, M., & Brewin, C. R. (1999). Intrusive memories in depression and posttraumatic stress disorder. *Behaviour Research and Therapy, 37,* 201–215.

Watkins, E., Teasdale, J. D., & Williams, R. M. (2000). Decentering and distraction reduce overgeneral autobiographical memory in depression. *Psychological Medicine, 30,* 911–920.

Wessel, I., Meeren, M., Peeters, F., Arntz, A., & Merckelbach, H. (2001). Correlates of autobiographical memory specificity: The role of depression, anxiety and childhood trauma. *Behaviour Research and Therapy, 39,* 409–421.

Wilhelm, S., McNally, R. J., Baer, L., & Florin, I. (1997). Autobiographical memory in Obsessive–Compulsive Disorder. *British Journal of Clinical Psychology*, *36*, 21–31.

Williams, H. W., Williams, J. M. G., & Ghadiali, E. J. (1998). Autobiographical memory in traumatic brain injury: Neuropsychological and mood predictors of recall. *Neuropsychological Rehabilitation*, *8*, 43–60.

Williams, J. M. G. (1996). Depression and the specificity of autobiographical memory. In D. Rubin (Ed.), *Remembering our past: Studies in autobiographical memory* (pp. 271–296). Cambridge: Cambridge University Press.

Williams, J. M. G., & Broadbent, K. (1986). Autobiographical memory in suicide attempters. *Journal of Abnormal Psychology*, *95*, 144–149.

Williams, J. M. G., & Dritschel, B. H. (1992). Categoric and extended autobiographical memories. In M. A. Conway, D. C. Rubin, H. Spinnler, & W. A. Wagenaar (Eds.), *Theoretical perspectives on autobiographical memory* (pp. 391–410). Dordrecht: Kluwer.